[redacted]

410931

DELETED [illegible]ON ONLY

# OPERATION REDWING

## A PRELIMINARY REPORT

OF

DELETED [redacted] (HURON)

Submitted by Task Group 7.1



5716JFE

26 July 1956

[redacted]

CONTENTS

[redacted]

PAGE NO.





[redacted]

[redacted]

[redacted] (HURON)

## INTRODUCTION

The [redacted] device was a [redacted] using a [redacted] primary and a [redacted] secondary.

DELETED

[redacted] was detonated as the Huron Shot on a barge off Teiteiripucchi Island, Eniwetok Atoll in the Mike crater on July 22, 1956.

DELETED





[redacted]

[redacted]

# PART I

## GENERAL INFORMATION







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[redacted]

DEL[redacted] HURON)

ENIWETOK OBSERVED WEATHER FOR 22 JULY 1956
AT DETONATION TIME 0616M

| | |
|---|---|
| Sea Level Pressure | 1007.8 mbs |
| Free Air Surface Temperature | 81.4°F |
| Wet Bulb Temperature | 77.6°F |
| Dew Point Temperature | 76.2°F |
| Relative Humidity | 84% |
| Surface Wind | 090° 17 knots |
| Visibility | 10 miles |
| Weather | Widely scattered rain showers |

CLOUDS

3/10 cumulus, based at 1800 ft., tops estimated 10-15,000 feet with isolated tops to 30,000 feet.

10/10 cirrostratus, bases estimated 30,000 feet (4/10 transparent).

ARMY WEATHER SUMMARY FROM AIRCRAFT

Scattered cumulus clouds with tops averaging less than 12,000 feet. Occasional cumulus top to 18,000 feet. Hazy conditions below 10,000 feet. Could see GZ at 0615M from 16,000 feet.

Scattered cumulus tops to 16,000 - 18,000 feet, 50 miles northeast of Eniwetok.

STATE OF SEA

Ocean Side: Wave heights 4 feet, period 5 seconds, direction 100°.
Lagoon side: Less than one foot.

[redacted]

ENIWETOK UPPER AIR SOUNDING: (Release time 0600M)

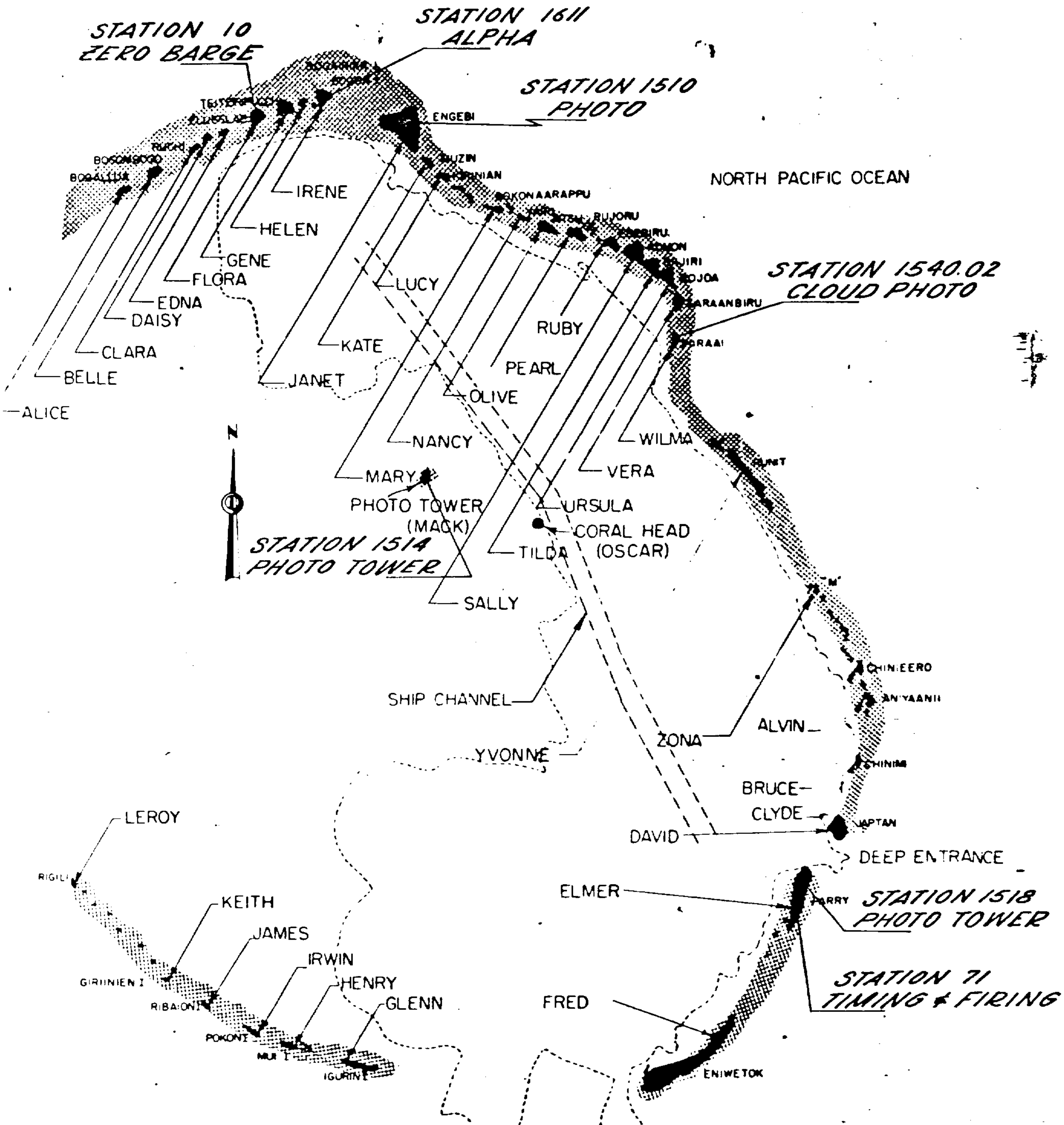
| Pressure (Millibars) | Height (Feet) | Temperature (°C) | Dew Point (°C) |
|---|---|---|---|
| 1000 | 250 | 26.8 | 24.2 |
| 938 | 2133 | 22.5 | 18.8 |
| 850 | 4980 | 18.2 | 13.5 |
| 700 | 10290 | 9.8 | 2.8 |
| 600 | 14440 | 2.5 | -5.8 |
| 500 | 19200 | -6.2 | -16.2 |
| 400 | 24840 | -15.8 | -27.8 |
| 300 | 31700 | -32.2 | -44.5 |
| 276 | 33629 | -36.3 | -48.2 |
| 200 | 40640 | -55.6 | M |
| 150 | 46460 | -69.8 | M |
| 116 | 51411 | -79.0 | M |
| 100 | 54150 | -75.8 | M |
| 50 | 67740 | -62.8 | M |
| 25 | 82080 | -53.3 | M |
| 20 | 86831 | -50.6 | M |

ENIWETOK WINDS ALOFT: (Release Time 0600M)

| Height (Feet) | Direction (Degrees) | Velocity (Knots) | Height (Feet) | Direction (Degrees) | Velocity (Knots) |
|---|---|---|---|---|---|
| 1000 | 110 | 17 | 32000 | 040 | 17 |
| 2000 | 100 | 23 | 34000 | 040 | 25 |
| 3000 | 100 | 25 | 35000 | 050 | 32 |
| 4000 | 100 | 24 | 36000 | 060 | 36 |
| 5000 | 120 | 24 | 38000 | 060 | 19 |
| 6000 | 110 | 24 | 40000 | 060 | 30 |
| 7000 | 100 | 27 | 42500 | 090 | 18 |
| 8000 | 100 | 29 | 45000 | 090 | 25 |
| 9000 | 100 | 21 | 47500 | 240 | 12 |
| 10000 | 100 | 10 | 50000 | 340 | 14 |
| 12000 | 090 | 8 | 52500 | 030 | 10 |
| 14000 | 080 | 16 | 55000 | 120 | 10 |
| 16000 | 060 | 13 | 57500 | 090 | 15 |
| 18000 | 060 | 10 | 60000 | 070 | 26 |
| 20000 | 020 | 6 | 65000 | 080 | 46 |
| 22000 | 050 | 5 | 70000 | 100 | 54 |
| 24000 | 050 | 4 | 75000 | 100 | 60 |
| 25000 | 070 | 4 | 80000 | 100 | 74 |
| 26000 | 120 | 4 | 85000 | 100 | 73 |
| 28000 | 100 | 4 | 86000 | 100 | 73 |
| 30000 | 040 | 9 | | | |

[redacted]

[redacted]




[redacted]

Fig. 0-1 - Eniwetok Atoll Map





[redacted]

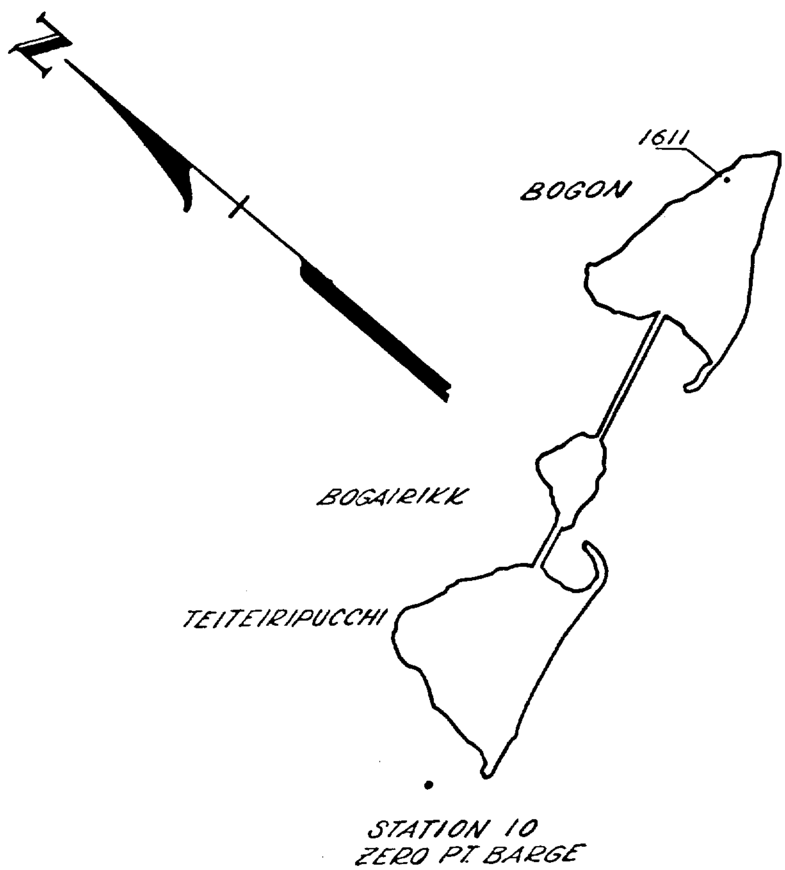



Fig. 0-2 - Bogon Island, Scientific Stations and Zero Point





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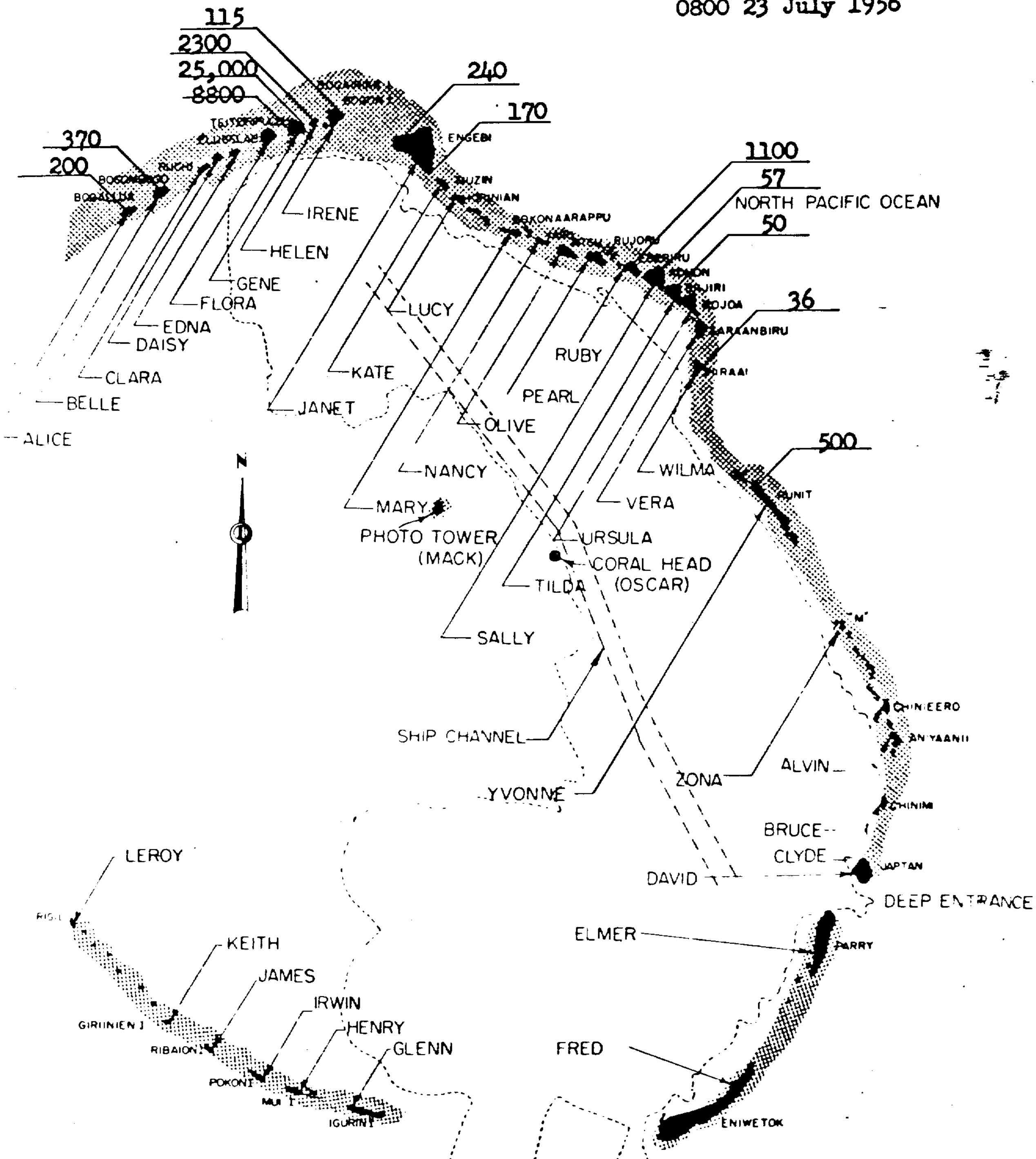
[redacted]

[redacted]

Reading in mr/hr
0800 23 July 1956




[redacted]

Fig. 0-3 - RadSafe Survey, D + 1

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[redacted]

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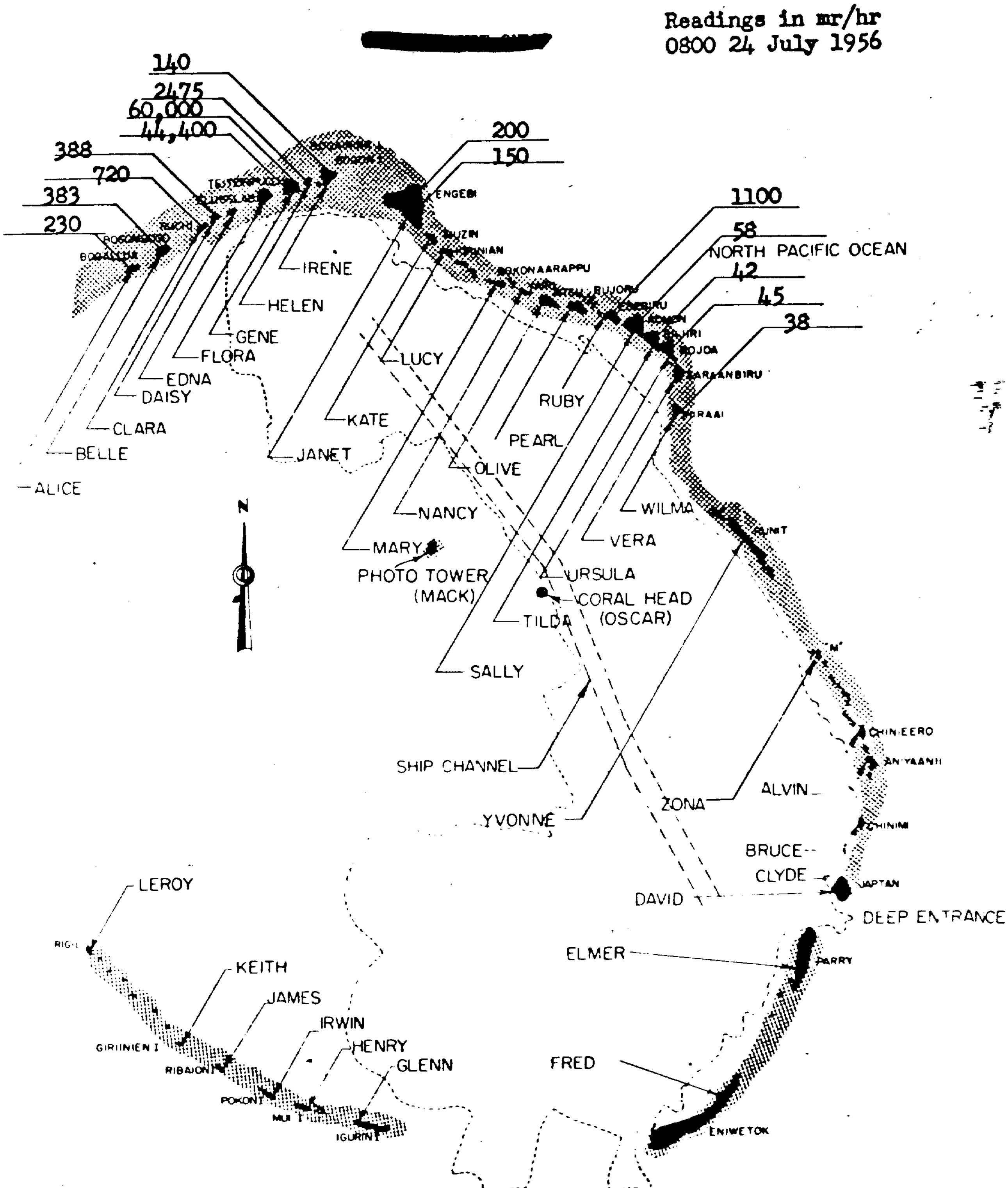


[redacted]

Fig. 0-4 - RadSafe Survey, D + 2

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[redacted]

[redacted]

Readings in mr/hr
0800 25 July 1956

[redacted] USE ONLY

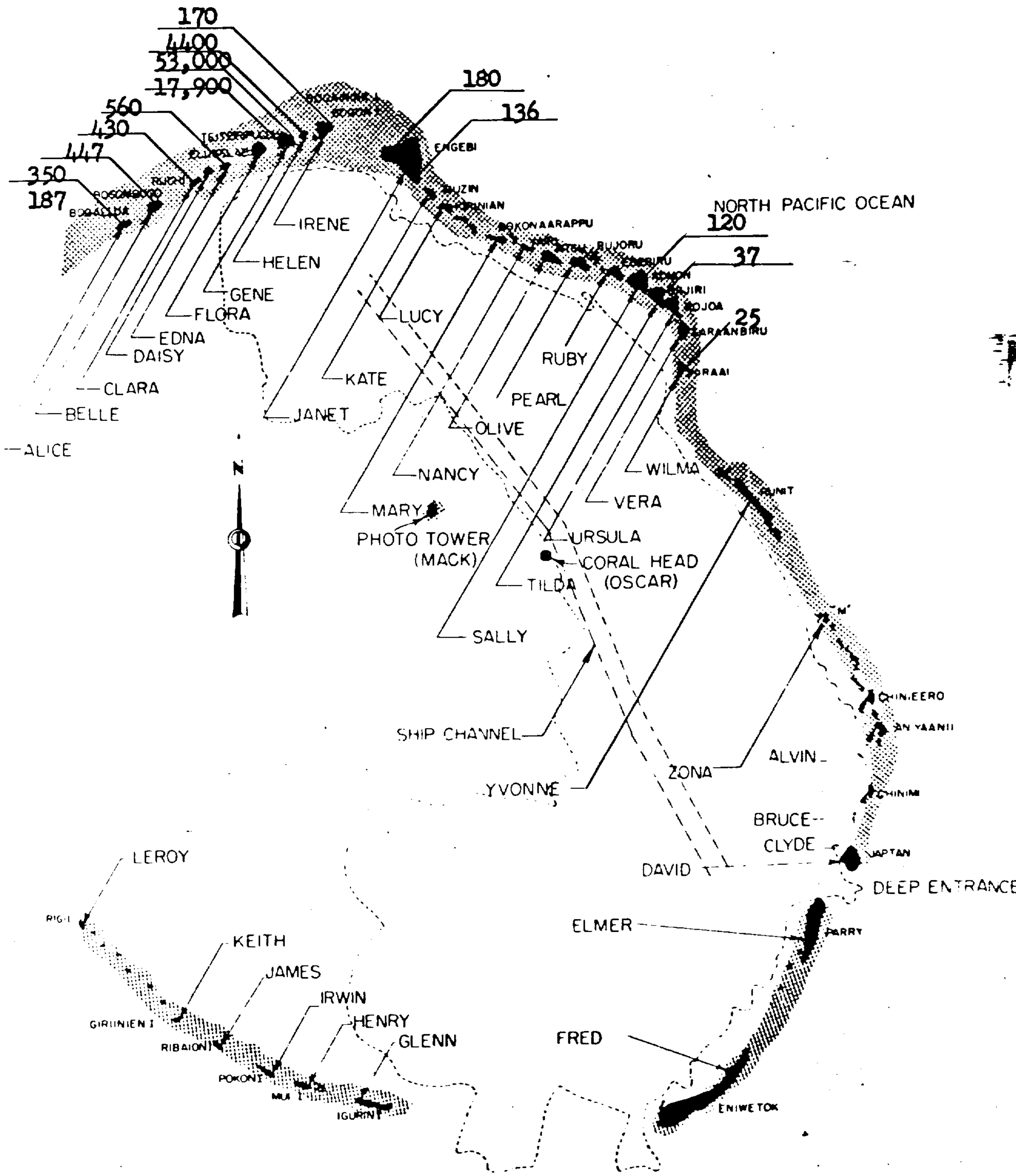


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Fig. 0-5 - RadSafe Survey, D + 3

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[redacted]

# PART II

## TASK UNIT 3

## DOD PROGRAMS

Col. K. D. Coleman
CTU-3

| | |
|---|---|
| Program 5 - Aircraft Structures | CDR M. R. Dahl |
| Program 6 - Tests of Service Equipment and Materials | Lt Col C. W. Bankes |

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Project 5.1 - In-Flight Participation of a B-47E Aircraft -

Lt Robert C. Laumann

OBJECTIVE

The objective of this project is to measure the blast, gust and thermal effects of a nuclear detonation of an in-flight B-47E aircraft. With the recorded data, the criteria and method used in the B-47E Weapon Delivery Handbook may be verrified or corrected. In addition, the project will provide basic research data for the design criteria of future USAF aircraft.

INSTRUMENTATION

Two hundred seventy three data channels were available on this shot to record bending shear and torsion in the wing and horizontal stabilizer, thermal inputs to the aircraft, thermally induced strain, temperature measurements, and overpressure. Prior to shot participation, 97.1 percent of these channels were operating satisfactorily. There has been no newly added instrumentation since the last participation.

AIRCRAFT POSITION IN SPACE

The B-47E was flying at an absolute altitude of 22,000 feet, a speed of Mach 0.67 and on a heading of 360° at both $T_o$ and $T_s$. The aircraft was offset 40,000 feet to the right from a path directly over the target. At $T_o$ the shot was ahead and to the left of the aircraft such that the horizontal range was 25,000 feet short of a point directly abeam of ground zero. At shock arrival, the aircraft was directly abeam of ground zero and exactly tangential to the impinging shock wave.

RESULTS

Thermal

The temperature rise was insignificant due to the limiting side loads





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position and very small thermal inputs that were received.

Gust

At time of shock arrival the gust load was 50 percent of limit wing bending at Station 493.0, the critical wing station. However, the fuselage bending, which was the prime consideration on this event, is believed to have been moderate; calibration of fuselage bending has not yet been accomplished.

Overpressure

[redacted]

Project 5.2 - In-Flight Participation of a B-52 - Lt Francis L. Williams

OBJECTIVE

The objective of this test was to determine the delivery capability of the B-52 aircraft.

INSTRUMENTATION

Instrumentation of the B-52 for Huron Shot consisted of 304 oscillograph channels which recorded measurements from strain-gage bridges, accelerometers, roll and pitch gyros, radiometers, pressure transducers, calorimeters, thermocouples, and control position transducers. In addition, 14 cameras recorded photorecorder instruments (14 channels), wing and tail deflection, cloud coverage, and fireball rise and growth.

AIRCRAFT POSITION IN SPACE

The following chart shows the aircraft's position at $T_o$ and $T_s$:

| | Altitude (abs.ft) | Offset (ft) | Heading (T-Deg) | Slant Distance (ft) | Velocity (fps) TAS | Velocity (fps) Ground |
|---|---|---|---|---|---|---|
| Conditions at Time Zero | 20,000 | 550 | 110 | 20,800 | 750 | 750 |
| Conditions at Shock Arrival | 20,000 | 400 | 110 | 30,600 | 758 | 758 |

RESULTS

Thermal Energy

28.6 BTU/ft$^2$ measured at BS 655 by a 160$^\circ$ field Calorimeter pointed straight down.

Maximum Temperature

148$^\circ$F measured on a 0.025 Aluminum elevator panel at ES 230. The absorptivity of this panel was 0.54.

Gust

60% wing bending at LHWS 444; 64% Tail Bending at LHSS 300.

Overpressure

[redacted]

Instrumentation Failures

Two oscillograph channels and one K-9 tail turret camera failed during the Huron mission. 99.1 percent of the total instrumentation was operative.

[redacted]

DELETED [redacted] (HURON)

Project 5.3 - In-Flight Participation of a B-66B Aircraft - R. W. Bachman

OBJECTIVE

The primary objective of this test was measure the gust, thermal, overpressure and high Q field effects of a high yield kiloton nuclear weapon on a B-66B aircraft.

INSTRUMENTATION

Instrumentation on the B-66B for DELETED [redacted] (HURON) consisted of the following: 67 strain gages at 5 stations and 26 thermocouples at 7 stations on the L.H. wing; 16 strain gages at 1 station and 6 thermocouples at 2 stations on the R.H. wing; 25 strain gages at 4 stations and 12 thermocouples at 2 stations on the L.H. horizontal stabilizer; 9 strain gages at 1 station and 2 thermocouples at 1 static on the R.H. horizontal stabilizer; 3 strain gages at 1 station and 9 thermocouples at 3 stations on the L.H. elevator; 2 strain gages at 1 station and 6 thermocouple at 1 station on the R.H. elevator. 17 accelerometers on the fuselage, empennage and nacelle; 13 calorimeters and 1 radiometer together with 6 cameras in the tail; 5 calorimeters and 1 radiometer together with 6 cameras in the fuselage belly; wing and tail deflection cameras and 32 basic flight instruments on a photo recorer panel and 8 correlation channels were used on the DELETED [redacted] shot (HURON).

AIRCRAFT POSITION IN SPACE

Using the K-5 Radar system and MSQ, the B-66B was positioned at an altitude 10,000 feet, on a heading of 040°, and a horizontal range of 8,540 feet at $T_o$. $T_s$, the horizontal range was 22,440 feet with the aircraft on the same heading at at the same altitude as before.

RESULTS

Thermal: Total thermal energy measured was [redacted] DELETED Maximum $\Delta$ T meas

[redacted]

was [redacted] on the 0.016 painted elevator panels, which gives a total temperature of [redacted] on the elevator.

Gust: Maximum gust loading at time of shock arrival was 3.26 g's and a limit allowable of 107% on the wing using a dynamic magnification factor of 1.56.

[redacted]

Operability: Of the 298 total data recording channels, 97% were operable.

Damage: There was no visible damage to the aircraft.





[redacted]

DELETED [redacted] (HURON)

Project 5.4 - In-Flight Participation of a B-57B - 1st Lt Harold M. Wells, Jr.

OBJECTIVE

The objective of this test was to measure the effects of a nuclear detonat on an in-flight B-57B aircraft weapons system.

INSTRUMENTATION

Out of 220 channels being recorded, 11 data channels were lost for various reasons.

AIRCRAFT POSITION IN SPACE

The JB-57B was flying at an absolute altitude of 16,400 feet, on a 054° T heading in a 4° nose right position at H + 0. Horizontal range to ground zero H + 0 was 10,000 feet (aircraft travelling at 782 ft/sec). Aircraft position time of shock arrival (H + 27.4 sec) was 29,000 feet beyond ground zero. Head same as H + 0, altitude 16,100 feet, speed 738 ft/sec.

RESULTS

DELETED

[redacted]

DELETED [redacted] (HURON)

## Project 5.5 – In-Flight Participation of an F-84F Aircraft –

1st Lt R. F. Mitchell – Lt J. A. Sabatella

### Objective

Barley – The objective of this participation was to study the dynamic response of fighter structures to anti-symmetric blast loads.

### Instrumentation

Barley – 100 data channels were available to record moment, shear, and torsion loads; accelerations; overpressure; and aircraft attitude. Out of these channels there were 3 channels that failed.

### Aircraft Position in Space

Barley – At time zero, the aircraft was flying at an altitude of 17,500 ft on an inbound heading of 060°. The horizontal range was 8,750 feet with an offset of 9,800 feet. The shock arrival position (at H+13.78 sec) was 17,500 feet altitude, zero horizontal range, and 8,800 feet offset.

### Results

Barley

Thermal – Negligible

Gust – 60% limit load in side fuselage bending

[redacted] DELETED

Waiter, the Capabilities F-84F, did not participate in the DELETED [redacted] shot (Huron).





[redacted]

[redacted]

[redacted] (HURON)

Project 5.7 - Thermal Flux and Albedo Measurements from Aircraft -

Capt R. L. Dresser

OBJECTIVE

The objective of Project 5.7 participation on this shot was to obtain thermal flux and albedo information of a nuclear detonation with airborne calorimeters, radiometers, and sixteen millimeter motion picture cameras.

INSTRUMENTATION

Instrumentation within the purview of Project 5.7 which was installed in the B-52 included nineteen NRDL calorimeters and two NRDL radiometers for measuring the direct and surface reflected thermal radiation. Two calorimeters were utilized to measure thermal radiation which was back-scattered toward the cockpit. Eight GSAP N-9 cameras were utilized to obtain photographic coverage of the fireball, the earth's surface, and of clouds beneath the aircraft, and also of any reflecting surface such as a cloud which could contribute to the back-scattered radiation.

Since the B-47 was being positioned for side loads for this shot the thermal input expected was extremely low. None of the basic eighteen instruments were operated in the tail. However, in an effort to obtain some total input figure with which to correlate the back-scatter data, two seven junction instruments and one of the most sensitive button instruments were operated in the vertical mount. A twenty junction instrument was operated in the tail box and this was simultaneously recorded on the Ampex system and the Consolidated system for purposes of obtaining





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a one to one correlation of the data taken on both systems. Five of the normal back-scatter channels were operated. Only three cameras were operated on this event, the one back-scatter camera and the two vertical cameras.

Project 5.7 instrumentation on the B-57 consisted of the basic twenty one instruments and six cameras.

Project 5.7 instrumentation on the B-66 consisted of the basic twenty one instruments and twelve cameras.

Neither tactical bomber (B-66, B-57) was instrumented for measuring back-scattered thermal radiation. The twenty one basic thermal instruments possessed various fields of view and were suitably filtered to obtain qualitative spectral distribution information. All channels were recorded on Consolidated Recorders except the five back-scatter channels in the B-47 which were recorded on magnetic tape. The cameras were equipped with red and blue filters to obtain information at each end of the visible region of the spectrum. Several cameras were equipped with spectroscopic attachments to obtain continuous spectra in the visible region. Two of these spectrographs were operated at the EG&G Parry photo tower.

AIRCRAFT POSITION IN SPACE

Information on the position in space of each aircraft is contained in the post shot reports of the following projects:

Project 5.1 - B-47

Project 5.2 - B-52

Project 5.3 - B-66

Project 5.4 - B-57

[redacted]

## RESULTS

### Thermal

The preliminary value of total thermal input to the aircraft obtained by Project 5.7 instrumentation is included in the post shot report of the appropriate project indicated above.

### Back-scatter Measurements on the P-47

All channels operated satisfactorily. The uncorrected values of inputs varied from a low of about 10 millicalories for the instrument in the tail to a high of about 80 millicalories for an instrument pointing up from the aircraft at 45° and to the left of the nose 30°.

### Photographic data

Of the total of thirty three cameras airborne in four aircraft, only one failed to operate properly. It is expected that the thirty two records obtained all should produce usable results as all aircraft were in relatively good position. No report of the operation of the two spectrographs in the Parry photo tower has been received as yet. No further evaluation of the photographic effort can be made until the film is developed.

Project 5.8 - In-Flight Participation of the A3D-1 Aircraft - LCDR P.S. Har

## Objective

The objective of this test was to investigate the A3D-1 aircraft capa-bility for the delivery of high yield nuclear weapons by the measurement an correlation of the in-flight effects of a nuclear detonation.

## Instrumentation

Instrumentation of the A3D-1 aircraft consisted of 96 oscillograph recording channels, one photo recorder, four GSAP (Gun Sight Aiming Point) cameras, and three dosimeters. The data recorded included temperature rise thermal input, rate of thermal input, overpressure, gust loading, aircraft response, engine response, and gamma radiation.

## Aircraft Position in Space

The A3D-1 aircraft was flying at an absolute altitude of 12,050 feet with no offset. Aircraft was on a heading of 286°T in a tail-on position a zero time. Approximate horizontal ranges at $T_o$ to $T_s$ were 16,800 feet and 48,000 feet respectively. Time of shock arrival was [redacted] The A3d was approximately 4000 feet beyond planned position. The ASB positioning gear was not operating satisfactorily and resulted in the A3D being roughly

DELETED

DELETED [redacted]

[redacted] (HURON)

Project 6.1 - Accurate Location of an Electromagnetic Pulse Source -

E. A. Lewis

OBJECTIVE

To utilize the electromagnetic signal originating from nuclear weapon detonations to determine ground zero of detonation. Secondarily to obtain the yield data that is available in the bomb pulse.

PROCEDURE

Location of ground zero is made by use of an inverse Loran principle. The exact time the bomb pulse is received at various stations is recorded. The exact time difference in receipt of the electromagnetic pulse between two stations will be used to determine a hyperbolic curve which runs through ground zero. The point of intersection of two or more curves determines ground zero.

RESULTS

With the exception of Griffiss AFB all stations in both the long and short base line successfully received and recorded the wave form of the electromagnetic pulse emanating from the bomb detonation. Line of position and fix errors will be reported later.

Griffiss AFB reported equipment failure.

[redacted]

DELETED [redacted] (HURON)

Project 6.3 - Effect of Atomic Explosions on the Ionosphere - M. Hawn

OBJECTIVE

The objective of Project 6.3 is to obtain data on the effects of high yield nuclear explosions on the Ionosphere. Principally, to investigate the area of absorption, probably due to the high altitude radioactive particles, and to study the effects of orientation relative to the earth's magnetic field on F2 layer effects.

INSTRUMENTATION

The system comprises

Two Ionosphere recorders, type C-2, operating on pulse transmission, installed in 6 ton trailer vans, one located at Rongerik Atoll and one located at Kusaie in the Caroline Islands.

One Ionosphere recorder, Type C-3, operating on pulse transmission, installed in a C-97 airplane. This station operated on the ground at Kwajalein.

METHOD OF OPERATION

Routine until H-15 minutes, thence continuous until H + 1 hour; thence once per minute until H + 2 hours; thence routine.

PRELIMINARY RESULTS

All stations operated successfully for this shot.

Recorded data from all stations will not be available for review until approximately 25 July 1956.



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[redacted] (HURON)

Project 6.4 - Determination of Characteristics of Airborne Flush Mounted antennas and photo Tubes for Yield Determination at Extended Ground-to-Air Ranges - A. J. Waters

OBJECTIVES

To determine the effectiveness of flush mounted airborne antennas and phototubes at various ground-to-air ranges in detecting characteristic low frequency electromagnetic radiation and visible radiation, respectively.

To determine the temporal and amplitude characteristics of the low frequency electromagnetic radiation at various ground-to-air ranges.

To determine the temporal and intensity characteristics of visible radiation at various ground-to-air ranges.

To determine the effects of ambient conditions upon the satisfactory measurement of the parameters specified in items 1 and 2 above.

INSTRUMENTATION

2 scope cameras
2 fiducial antennas
1 sequence camera
1 whip antenna
1 recorder
1 synchronizer
2 photoheads
2 DuMont Scopes (1 a dual beam, 1 a single beam)

TECHNIQUE

Signal is received by antenna fed through an amplifier and then to the scope. The signal is then photographed. Photohead output is let directly to the recorder. The sequence camera photographs the blast directly for use in correlation of previous data. Distance was approximately 135 miles.

[redacted]

RESULTS

Signal was received and recorded in both antennas. However, due to improper scope setting of minimum signal necessary to trip scope (too low), interference was recorded as well as the signal. It is doubtful if signal can be distinguished from interference.

Photohead data was obtained on both channels of the recorder.

No signal was obtained on the whip antenna.



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[redacted]

Project 6.5 - Analysis of Electromagnetic Pulse Produced by Nuclear Explosion - C. J. Ong

OBJECTIVE

The objective of Project 6.5 is to obtain waveforms of the electromagnetic radiation for all the detonations during Operation REDWING. This data is to be used in connection with a continuing study relating the waveform parameters to the height and yield of the detonation.

INSTRUMENTATION

Two identical stations are used to record data, one at Eniwetok and one at Kwajalein.

The instrumentation consists of a wide-band receiver with separate outputs connected to each of the three oscilloscopes. Mounted on each oscilloscope is a Polaroid Land Camera for recording the transient display.

RESULTS

Station A - Parry Island

Data was recorded on all oscilloscopes. The predicted field strength was [redacted] Due to the fact that the field strength was greater than predicted the traces went off scale and no accurate determination of field strength can be made.

Station B - Kwajalein

This station operated satisfactorily. No results are obtainable at this date.

[redacted]

PART III

TASK UNIT 1

LASL PROGRAMS

Keith Boyer
Advisory Group

| | | |
|---|---|---|
| Program 10 | Thermal Radiation and Hydrodynamics | H. Hoerlin |
| Program 11 | Radiochemistry | G. Cowan |
| Program 13 | Fission Reaction Measurements | J. S. Malik |
| Program 15 | Photo-Physics | G. L. Felt |
| Program 16 | Physics & Electronics & Reaction History | B. E. Watt |

[redacted]

DELETED [redacted] (HURON)

Project 10.1 - Fireball Hydrodynamics - J. F. Mullaney

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This number was obtained using the differential and integral methods with the Bethe-Fuchs mass treatment.

The three films used were 37552 (Parry), 37561 (Piiraai), and 37545 (Mack). The Parry and the Piiraai film were read only to about [redacted] the Mack film was read to [redacted] the time of the first light minimum. Up to about [redacted] the radii from the three films are in agreement, but between [redacted] the radii of the Mack film read slightly higher.

All three films were used in the differential method. The integral method in its present form requires relatively late-time data, and only the Mach film was read to these times and could be used.

Several mass distributions were considered in the mass treatment, as indicated in Table 10.1-1. The smallest mass considered is that of the weapon plus most of the barge. The other mass distributions consider varying amounts of surface water. The higher yield given by the integral method is in part the result of using only the Mack film in this method.

When more films are read to the breakaway region, the calculations will be redone. It is hoped that the discrepancy between the yields given by the two methods will then be decreased.

H

[redacted]

DELETED [redacted] (HURON)

TABLE 10.1-1

| Weight of Mass Considered (Pounds) |
|---|
| 0 |
| 330,000 |
| 500,000 |
| 1,000,000 |
| 2,000,000 |

DELETED

*Based on three films.
**Based only on the Mack film.





[redacted]

3

H

[redacted]

DELETED [redacted] (HURON)

Project 10.2 - Time of Arrival - J. F. Mullaney

L. N. Blumberg & J. F. Mullaney

Weather conditions of interest at shot time, as provided by Weather Central (Eniwetok) are:

| | |
|---|---|
| Pressure: | 1007.8 |
| Temperature: | 81.4°F |
| Dew Point: | 76.2°F |
| Wind: | 17 knots from 090° |

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[redacted]

The results of the time-of-arrival calculation are presented in Table 10.2-1.

TABLE 10.2-1

| Station | Range (ft) | Bearing | Range, Wind-Corrected (ft) | Time of Arrival, sec | Yield |
|---|---|---|---|---|---|
| Station 71 (Parry) | 113,714.7 | 146°15' | [redacted] | | |

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[redacted]

DELETED [redacted] (HURON)

Project 11.1 - Radiochemical Analysis - G. Cowan

The best-fission yields as of the time of writing this report are as follows:

DELETED

DELETED [redacted] (HURON)

Project 11.2 - Sampling - H. F. Plank

Sampling for the DELETED [redacted] shot was essentially routine and proceeded as outl in Program 11's Standard Cloud Sampling Mission Plans for REDWING, H. F. Pla 16 April 1956, 1174JFE, page 29. Two F-84G aircraft were used in loose trai formation in place of the single B-57B sampler at the lowest altitude previo specified so that a special glass fiber filter paper could be tested. Becau of its lower resistance to air flow with the fiber glass material, the alpha cellulose filter paper in the other filter unit collected 3.8 times more bom debris.

A special effort was made to reduce cross-contamination from the preced shot in the allowed 24 hour period so that the radiochemical analyses DELETED planne DELETED [redacted] would not be compromised. The preceding shot was a UCRL [redacted] device.

A compromise procedure for decontaminating the B-57B filter units consi of removing the valve sections, scrub-washing their exposed surfaces and tho the diffuser section while disassembled. The unit was washed and rinsed twi more after the valve section was re-assembled. Any cross-contamination whic be seen in the samples must come from the fallout which occurred during clea operations.

Although numerous cumulo-nimbus clouds and considerable cirrus were pre during and after shot time, the cloud was sufficiently visible for the recon sance aircraft to determine that the altitude of the active stem was approxi 17,000 feet and for the highest aircraft to determine that the top of the ma cloud was approximately 52,000 feet indicated pressure altitude. Sampling w started about 15 minutes earlier than originally planned.

All samples were the desired size, except for the lowest B-57B aircraft. Its mission was shortened to allow a very safe flight time reserve to forestall a fuel emergency in case one of the heavy rain storms in the vicinity should block his landing. Results of t[redacted] sampling mission are presented in Table 11.2-1.

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[redacted]

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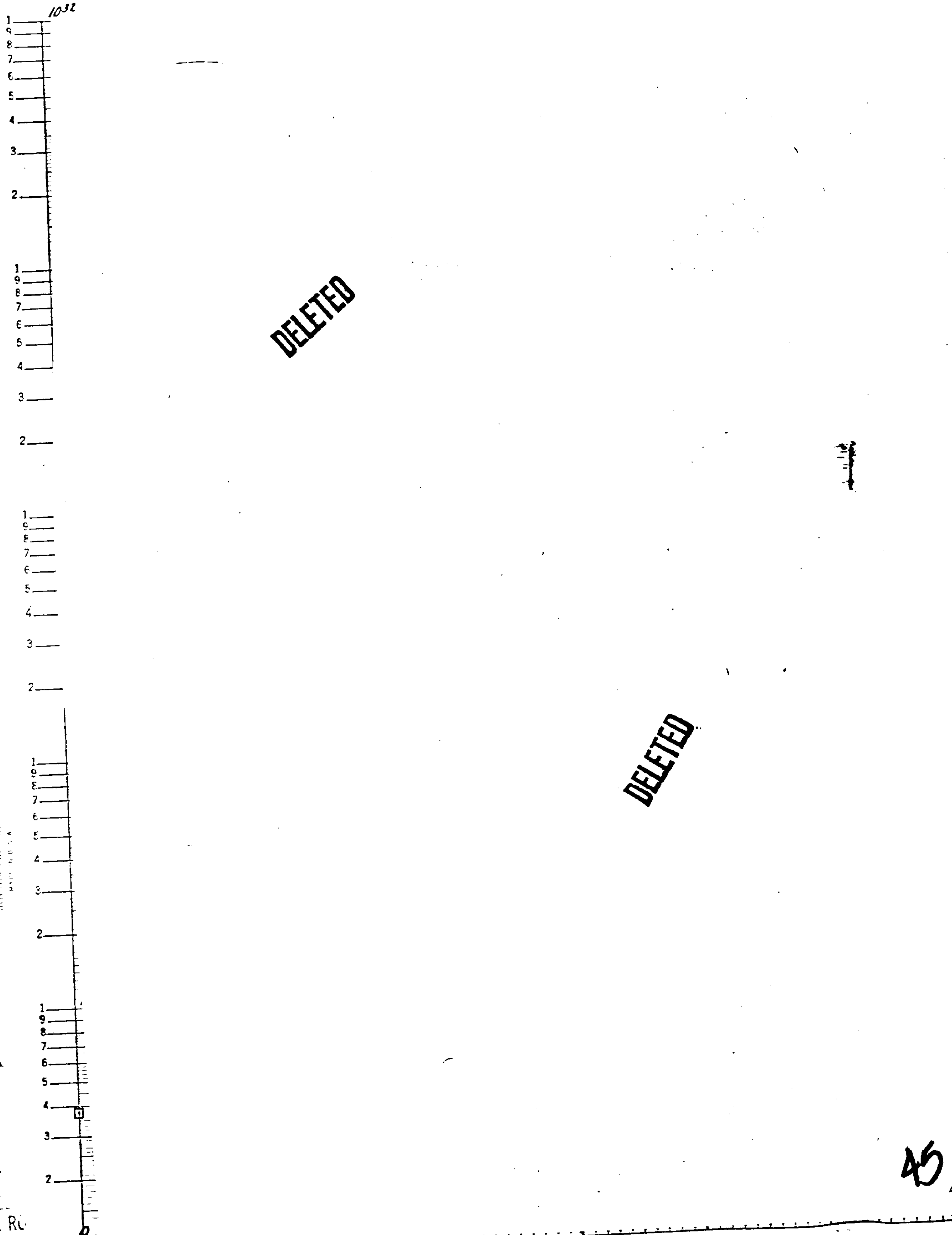
[redacted]

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DEL[redacted](HURON)

Project 13.3 - ENS Monitoring - D. Henry

J. Malik

DELETED





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[redacted]

DEL[redacted]D (HURON)

Project 15.1 - EG&G Photography (Fireball and Bhangmeter) - H. Grier

D. Berkowitz

DELETED





[redacted]

[redacted]

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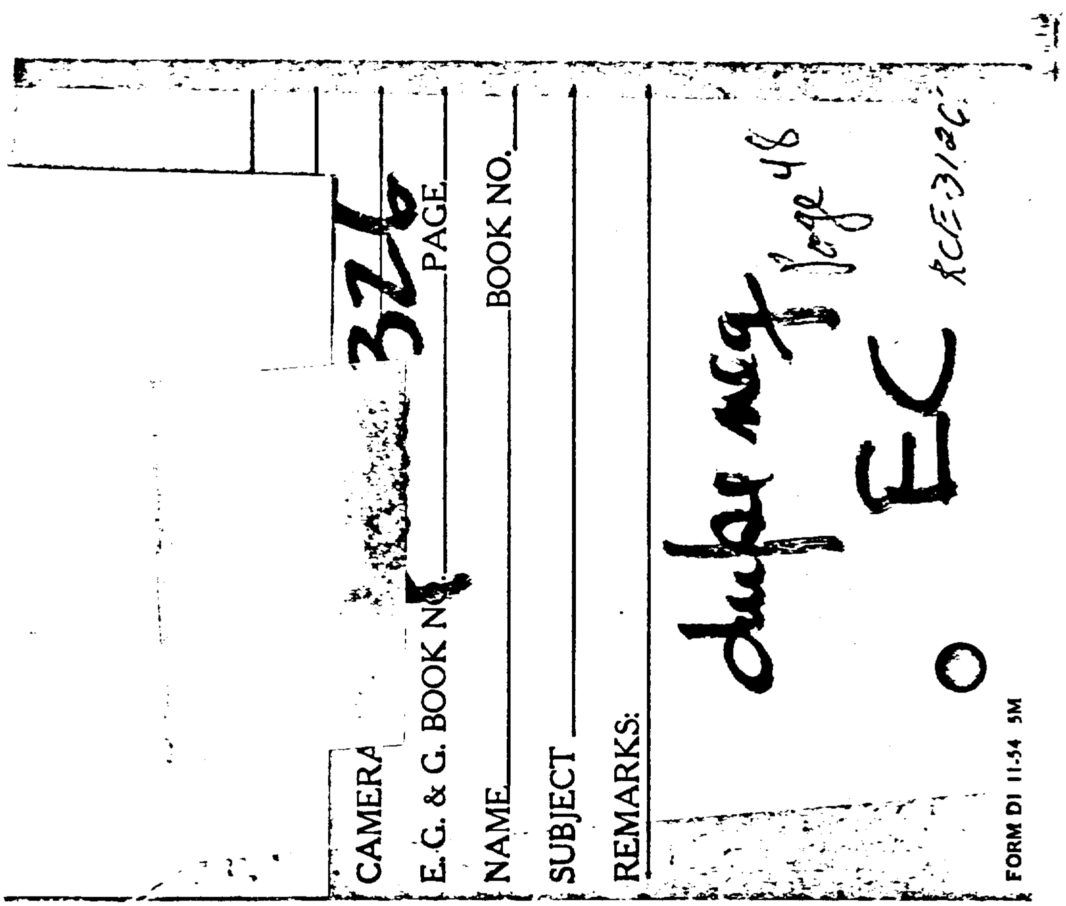

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[redacted]

DELETED [redacted] (HURON)

Project 15.2 - High Speed Photography - Time Interval Measurement - G. Felt

. L. Allen

The decision to fire DELETED [redacted] (Huron) at Eniwetok Atoll made it necessary for Program 23 (UCRL) to perform the high speed photographic time interval measurement. The observations were made from Station 2301. Seven Model 100 streak cameras were employed. The time interval between the primary and secondary reaction has been preliminarily measured DELETED [redacted] The camera schedule, which relates to the accompanying figures, is given in Table 15.2-1. The figures are contact prints of the records obtained and illustrate many interesting details of the luminous phenomena associated with the detonation. The usual gamma and neutron Teller flashes are seen as is the fireball growth in its earliest stages.

TABLE 15.2-1 - CAMERA SCHEDULE

| Fig. No. | Writing Speed | Telescope Focal Length | Slit Width Inches | Slit Width Time sh | Field of View |
|---|---|---|---|---|---|
| 1 | 10.2 mm/μs | 60 inches | .025 | 3.6 | Slit vertical, device near lower end. |
| 2 | 15.1 " | 240 " | .025 | 2.4 | Slit horiz., aimed above device |
| 3 | 10.4 " | 60 " | .025 | 3.6 | " |
| 4 | 10.5 " | 240 " | .050 | 7.2 | " |
| 5 | 5.4 " | 40 " | .025 | 7.2 | " |
| 6 | 5.4 " | 240 " | .050 | 14.4 | " |
| 7 | 10.3 " | 60 " | .025 | 3.6 | Slit vertical device near lower end. |

[redacted]

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[redacted]

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DELETED [redacted]

[redacted] (HURON)

Project 16.3 - Electromagnetic Measurements - R. Partridge

Project 16.3 measures the time interval between the primary and secondary reactions [redacted] by direct oscilloscopic recording of the electromagnetic radiation in the radio frequency range. Methods of obtaining other diagnostic information from the signal are also investigated.

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The time interval system functioned correctly, except for one scope which did not intensify fully.

DELETED

The records will require careful study to determine the correct time interval because the signal exhibited a small precursor which had not been seen before.

The early signal does not appear to contain alpha.





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[redacted]

PART IV

TASK UNIT II

UCRL PROGRAMS

W. D. GIBBINS
Dep for UCRL

PROGRAM 21 - RADIOCHEMICAL ANALYSIS    R. Goeckerman

[redacted]

DE[redacted]HURON)

Project 21.3 - Gas Analysis - F. Momyer

DELETED

TABLE 21.3-1

TIME - 06.16, 22 July 1956

| Bottle | #69 RW-HU - BP-174 | #70 RW-HU - BP-194 | #71 RW-HU - BP-196 | #72 RW-HU - BP-200 |
|---|---|---|---|---|
| Flt. | Tiger Red 1 | Hot Shot I | Hot Shot II | Hot Shot III |
| Alt. | 31,500 | 50,800 | 42,000 | 47,500 |
| Coll. Time | 31 mins | 10 mins | 30 mins | 17 mins |

DELETED

[redacted]

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Huron

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Huron

July 28, 1956

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